

## Laidlaw Programme – Leadership Development Reflections

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As I come to the end of my two years on the Laidlaw Scholarship programme, I want to take some time to reflect upon my experiences, personal growth, and the new knowledge and skills I've learnt.

### Application:

I first heard about Laidlaw from an academic in my department, she was supervising a Laidlaw scholar in the previous cohort. She spoke very highly of the programme and the work her scholar was doing. After researching the programme more, I was struck by the huge array of different topics other scholars were working on and all the opportunities that Laidlaw had opened for them. I was excited by the opportunity to work with an academic on a research project which was at the cutting edge of the field.

As a Computer Scientist, a key passion of mine has always been designing and making technology that will make a real, meaningful impact to society. I knew the research project would allow me to see all aspects of this process, from the initial ideas and design through to handing the product over to users and testing.

The leadership development aspect of the programme also massively appealed to me. Not only did the Laidlaw Leadership values closely align with my own, but I also knew how beneficial the leadership training and Leadership in Action placement would be for me. Although I didn't have a clear idea of what my Leadership in Action project would entail, I was captivated by reading about other people's project.

I had previously worked on a project involving educational technology, so when I learned that an academic in Durham was proposing a project involving an Adaptive Educational Hypermedia System, I was intrigued. In my initial meeting with my supervisor, we discussed the theory behind the idea, but also how I could take the initial proposal and develop it into my own project.

The main aim of the project was to develop a piece of educational technology; an 'augmented tutor', which had two key components. Firstly, artificial intelligence would be to build a system which could identify lessons which may be useful to the learner. Secondly, the user interface of the system would use augmented reality to display the tutor, and a series of lessons to the user. The project would involve research and design, as well as developing a prototype for the system. This was incredibly ambitious, especially given the 6-week timeframe for the project, so I was working in collaboration with another student.

### Summer 1:

As with most other people in my cohort, my project plans changed due to the Covid-19 pandemic and UK lockdowns. I had originally intended to work in the Computer Science department in Durham, where I would be in regular contact with my supervisor and the other student working on the project. However, as the start date for my project was approaching, it became apparent that working in-person and onsite was not a feasible option. In a meeting with my supervisor, we

discussed a range of possible options, including delaying my project until the end of the summer and working over the Christmas and Easter vacations in the next academic year. As the pandemic was so unpredictable, and it was possible for me to work remotely, we decided to complete the project virtually.

Instead of having the regular contact with each other that working in the same office would provide, I ended up discussing the project in weekly meetings with my supervisor. This was challenging, because at first, I relied quite heavily on my supervisor's input and guidance. However, I quickly began to use these meetings as an opportunity for us to define a series of clear goals for the week ahead, as well as reflect on the progress I had made that week and became increasingly independent in my work.

Working virtually did present opportunities that wouldn't have otherwise been available to me. For example, I was able to attend ICG (Innovative Computing Group) research meetings, which was attended by students and academics from all over the world. I was asked to present my work to the group, which was incredibly nerve-wracking for me as it was a completely new experience. However, the audience were interested in my work and offered advice on some of the issues I was facing. It built my confidence, and I was more comfortable with discussing my research with others after this.

While I focused on the Augmented Reality interface, the student I was working with developed the Machine Learning system for the app, using Python. This automatically identified key concepts from a series of lecture slides. He was working on the project as part of his MSc final project, so although we worked together, we both had to be aware of each other's needs and goals. I was predominately using Unity, and C# to develop the interface and therefore, we encountered a key obstacle in integrating our two systems, which had been developed separately.

Although this was incredibly frustrating at the time, we identified that the only solution was to link both systems to the same database. This required changes to be made to both of our systems but was successful in integrating the two halves. This experience taught me that sometimes the best option isn't immediately obvious but thinking outside of the box sometimes causes the solution to present itself. It also highlighted the importance of designing or planning the whole system before we started implementation may have avoided these integration problems.

All the design decisions I made for the system, were based on research I conducted. Many key components of my design were based around gamification. Gamification is the use of elements that are typically found in games in a non-game activity, to increase engagement and enjoyment. One gamification element I used were relative leader boards, where users only see their rank as compared with their closest ranking peers. This prevents students from feeling discouraged when they are ranked lower down. This process of directly relating my research to my design, made me become more considerate of my choices, and allowed me to be able to justify them when I was presenting my work.

#### Welcome Event:

Shortly after I began my research project, I had the privilege of attending the Global Induction Session. The pandemic meant that Durham's Laidlaw Welcome event had to be cancelled, but the global induction session brought together people who were involved in the programme from all over the world.

The event involved talks from programme alumni, Lord Laidlaw, and current scholars to name but a few. After this, there was a global networking session where I was introduced to other new scholars

who shared similar research interests to me. We were able to discuss our research, university experiences, the challenges the pandemic was imposing on our work, and the ways we could overcome them.

The whole event highlighted the amazing community of people who are involved in the Laidlaw programme, and the incredible work they are doing as part of it. After the session, I was excited by all the opportunities that Laidlaw could present and was motivated to get involved. At this session, someone said 'the more you put into your scholarship, the more you get out'. These words have stuck with me throughout my time on the programme, and I have endeavoured to say 'yes' to all the opportunities I have been offered.

### Summer 2 Planning:

Although I had massively enjoyed my research in summer 1, I knew that I wanted to challenge myself to try something completely different in summer 2. At the end of the first summer, I had reflected on the skills I had developed over my research project and identified areas I wanted to develop further during summer 2. Specifically, I wanted to develop my leadership abilities, team working skills and critical and creative thinking. I took this into account when I was selecting the project I wanted to apply to.

Ultimately, I decided to apply to work with Change the Code, a student-led organization non-profit organization that aims to improve the gender imbalance in STEM fields. The main aim of the project was to establish a branch of Change the Code in the UK, and to do outreach work with female students in the UK. I had previously worked with organisations supporting women in technology, and I was aware of the importance of combatting the gender imbalance, both for the individual and for the industry and society as a whole.

### Summer 2:

The project started with orientation and a discussion on the issue of the gender gap in STEM fields. We researched existing organizations aiming to support Women in STEM and found that there was of organizations supporting female students in high school. We wanted to create a platform which could support and encourage students as they were pursuing STEM education, but also give them an insight into potential STEM careers.

Based on this, we decided to host an online summer school with four workshops, each inspired by one of the STEM fields. Each workshop would be inspired by a STEM career and be targeted at female students in years 8 and 9. For the next couple of weeks, we were developing our course content, giving each other feedback, and contacting local schools and organisations to recruit students onto our online workshops.

A major obstacle that we encountered was that we weren't able to recruit enough students for our workshops. We explored several solutions, including running the workshops over a series of weekends, or developing online courses. Ultimately, we decided that online courses were the best solution as they would have wider reach, with no capacity-limit, and would be available long-term. Furthermore, there would be the potential to add new courses in the future. After students have completed our courses, we would like to host a one-day international ideation competition for our students, allowing our student to meet each other and use the skills they have learnt.

One of the highlights of this project for me was the team. We all studied range of different subjects, from various different universities, but we were united by the same goals for the project. Everyone

worked collaboratively to share our resources, knowledge, and experience. As a team, we spent time brainstorming and evaluating a range of ideas. The wide range of ideas, experience, and viewpoints that everyone brought to these brainstorming sessions were critical to the success of the project.

The problems we faced with recruitment showed me how to critically evaluate our progress and when to change our approach, to minimise losses. We had several meetings where we discussed why our outreach efforts hadn't worked and debated our next steps. These discussions focused on what would happen if we postponed our workshops, and still weren't successful with recruitment. Because we knew that our workload would increase significantly in the next academic year, we agreed that postponing the workshops beyond the summer vacation wasn't feasible, which was a major factor in pivoting to the online workshops. Despite our disappointment that our original idea hadn't been successful, we exhibited resilience and instead looked at the new opportunities our approach would bring.

Although I had some experience of presenting my work from my research project, I wanted the opportunity to develop my skills further this summer. I regularly presented my ideas and research to the group, as well as recording videos of myself presenting my course content. I had to be self-critical of my own presenting style, to ensure the course content was engaging.

Throughout this project, I was challenged to try some completely new things, such as branding, outreach and marketing. I was able to utilise the expertise of the other scholars on the project, and their encouragement gave me the confidence to try them.

#### Leadership Development:

The leadership training sessions, run by the team at Durham University, have been invaluable in terms of my development as a leader. In these sessions, I was challenged to try all sorts of new things, including consulting, pitching and entrepreneurship. I had numerous opportunities to reflect on my knowledge, skills, leadership style and my personal development goals.

For me, the highlight of these training sessions were the guest speaker sessions. The speakers included Durham Laidlaw alumni, local entrepreneurs, academics from the university and members of the Careers and Enterprise team. I learnt an incredible amount from these speakers, and hearing about their experiences was motivational and inspiring. At one of the first sessions I attended, we heard from a Durham Laidlaw Alumni, who described her experiences on the programme and how she was using the things she had learnt to further her career. This really opened my eyes to the opportunities that Laidlaw can open, even beyond the programme itself.

Both my summers on the programme were filled with exciting events hosted by the Laidlaw network. I particularly enjoyed the Global Leadership Talks series, in which each university participating in Laidlaw would invite a speaker to share their leadership journey and experiences. Not only did these events bring together Laidlaw scholars from all over the world to participate in the discussion, but they allowed me to hear about a vast array of leadership experiences. As these events covered similar topics to the Leadership training events, I was able to develop an understanding of how the leadership concepts I was learning were applied in real-life settings.

#### Durham Laidlaw Scholars Organisation:

Durham Laidlaw Scholars Organisation (DLSO) organised events and socials throughout our time on the programme. These events provided a great opportunity for us to get together in an informal

setting and discuss our experiences of the scholarship and our projects. In 2020, the majority of us were completing our projects remotely, so our cohort started weekly lunchtime drop ins. At these, we discussed our progress on our respective research projects, any problems we were facing, and our plans for our Leadership in Action projects. I enjoyed getting to meet the 2019 cohort, and hearing about their experiences of attending the Laidlaw Scholars conference and completing their research projects in-person.

As our cohort were selected in March 2020, we didn't have the opportunity to meet in-person for a significant portion of our time on the programme. Despite this, we made the effort to build relationships with each other online, and ultimately, we developed a supportive network who we can all contact for help and advice.

### Conclusion:

Throughout my time on this programme, I have been constantly challenged to try new things, and I have developed the confidence to do them. Although the thought of speaking in front of a room full of people still slightly terrifies me, I now know that I have the ability to do it, and that is thanks to the experiences I have had doing Laidlaw.

Another key takeaway from my work as a scholar has been the importance of supporting decisions with research. When I was developing the prototype of the Augmented Tutor, I ensured that every design decision I made was supported by research, to ensure the system could achieve its key objectives. I took this approach forward into my Leadership-In-Action placement, and this is also something I will implement in my future projects.

Laidlaw has presented me with the opportunity to speak to a huge variety of different people, learn from their experiences, ask for their help, offer them my expertise in return. My experiences have helped me to recognise the unique skillset and knowledge that I have, and that these could be valuable to others. The people that I have met have, without a doubt, been the best thing about being part of Laidlaw, and I am immensely grateful to them, because they have shaped my whole experience.